Data sheet

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R&S®SR8000 Family of VHF FM Transmitters

Air-cooled transmitters for 100 W to 2.5 kW

- Digital exciter with excellent spectral purity
- RF parameters meeting or exceeding ETSI and ITU-R requirements
- Compact 19" rack format
- Transmitter for 2.5 kW in only eight height units
- Integrated stereo coder
- Transmitter remote control and monitoring via SNMP option and web interface
- Integrated parallel remote-control interfaces
- Solid-state broadband amplifiers with guard circuits and integrated harmonics filter
- Very robust operation even with high VSWR
- State-of-the-art MOSFET technology in power amplifiers
- Passive standby and (n+1) standby possible
- Easy operation via graphical display
- Easy installation, startup and maintenance due to all-in-one box concept

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At a glance

The air-cooled R&S®SR8000 generation of FM transmitters covers a power range from 100 W to 2.5 kW. The transmitters include the following components:

- Exciter based on the R&S®SU800
- Power amplifier
- Housing with integrated cooling
- Power supply
- Integrated transmitter control unit

All transmitters feature outstanding technical parameters, an optimum cost/benefit ratio, extremely high reliability plus ease of servicing. They contain the engineering of the digital state-of-the-art R&S®SU800 exciter and include an integrated AES/EBU interface.

The air-cooled 19" units are extremely compact. The 100 W transmitter occupies two height units, the 1000 W transmitter four height units, and the 2.5 kW transmitter only eight height units. The 2.5 kW transmitter consists of two modules. The first module contains the exciter functions, an amplifier with an integrated splitter and a power supply. The second module contains the second amplifier, the combiner, the absorber and a second power supply.

The transmitter control unit handles internal and external communications, including all control functions, and displays the transmitter's current status in various languages on a display. All transmitter and amplifier parameters required for diagnostics can be retrieved locally as well as remotely via standard (IP) protocol and standard software (web browser, SNMP option). In addition, an integrated parallel remote-control interface for message signaling and commands is available.

R&S®SR8010 VHF FM transmitter

Both (n+1) standby and passive standby systems can be implemented.

The transmitters comply with the R&TTE Directive 1999/5/EC and meet the following standards: EN 60215 for protection of personnel, EN 301489-1 and EN 301489-11 for EMC, EN 302018-1 and EN 302018-2 for RF requirements and ITU-R B.S450-3 for stereo emissions.

Exciter

The synthesizer-based digital exciter generates a frequency-modulated RF signal in the range from 87.5 MHz to 108 MHz. The exciter combines the outstanding specifications of first-rate analog exciters with the reliability of modern digital signal processing.

Analog AF signals as well as digital signals can be processed in line with the bit-serial AES/EBU protocol. Left/right, MPX, RDS or SCA signals can be used as modulation signals.

All signal processing including frequency modulation is performed digitally. By using powerful digital technology and state-of-the-art D/A converters, this exciter meets the high requirements for spurious and spectrum masks. The integrated stereo coder has its own deviation limiter.

All parameters such as transmit frequency, operating mode and modulation mode, as well as properties of the modulation interfaces can be set from menus via the transmitter control unit. The measurement results of the exciter parameters, the exciter state (e.g. operating hours, system events) and modulation data (e.g. frequency deviation, AF level) are evaluated and displayed. An error table supplements the monitoring functions.

Power amplifier

Owing to state-of-the-art MOSFET technology, the power amplifier features excellent efficiency and compact design. In the RF amplifier, the signal is increased to a power of approx. 100 W, 250 W, 500 W, 1000 W or 1300 W. The harmonics filter integrated in the amplifier ensures compliance with ETSI standards.

An amplifier controller not only monitors and evaluates protective functions (e.g. overtemperature switchoff, VSWR reduction), but also provides phase correction and controls the output power, thus preventing the amplifier from being overdriven if a transistor fails, etc. This ensures a long life for the individual transistors. Each amplifier is, therefore, self-monitoring and self-protecting.

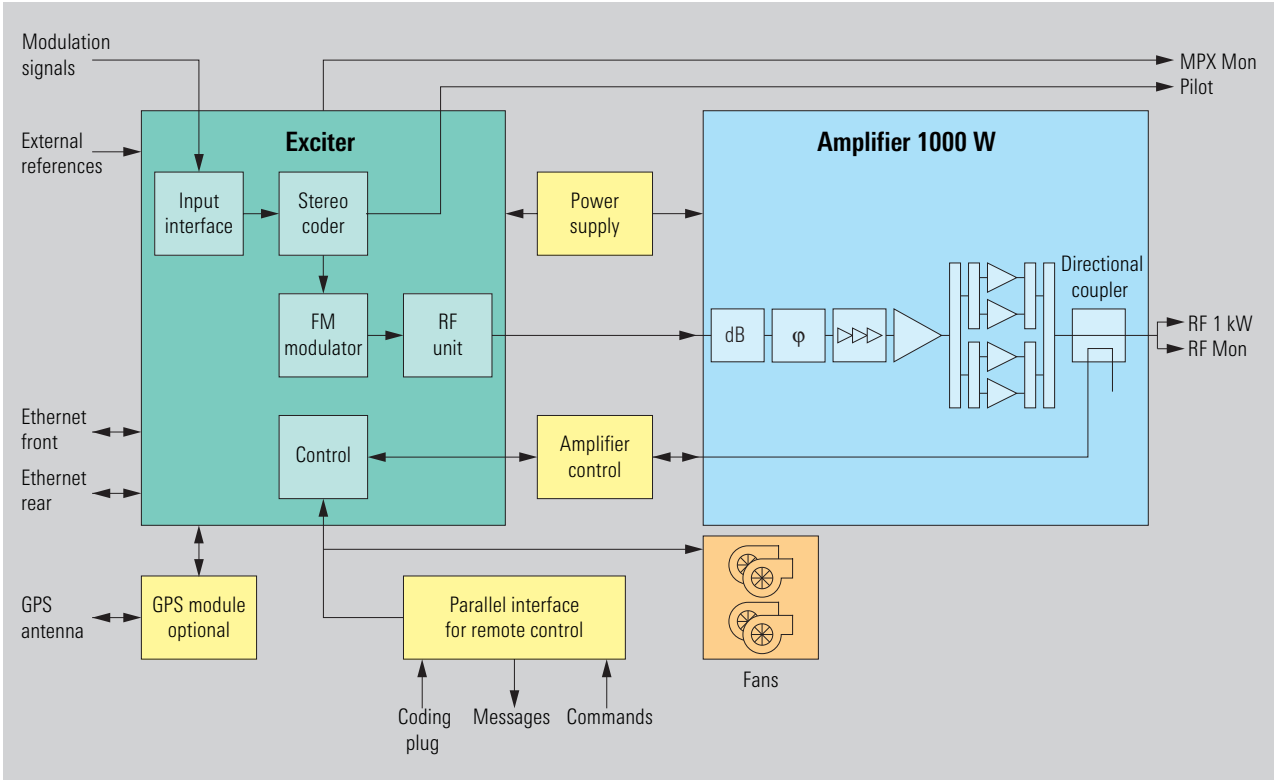
All relevant operating parameters and fault messages are transferred to the transmitter control unit via a CAN bus interface.

Transmitter control unit

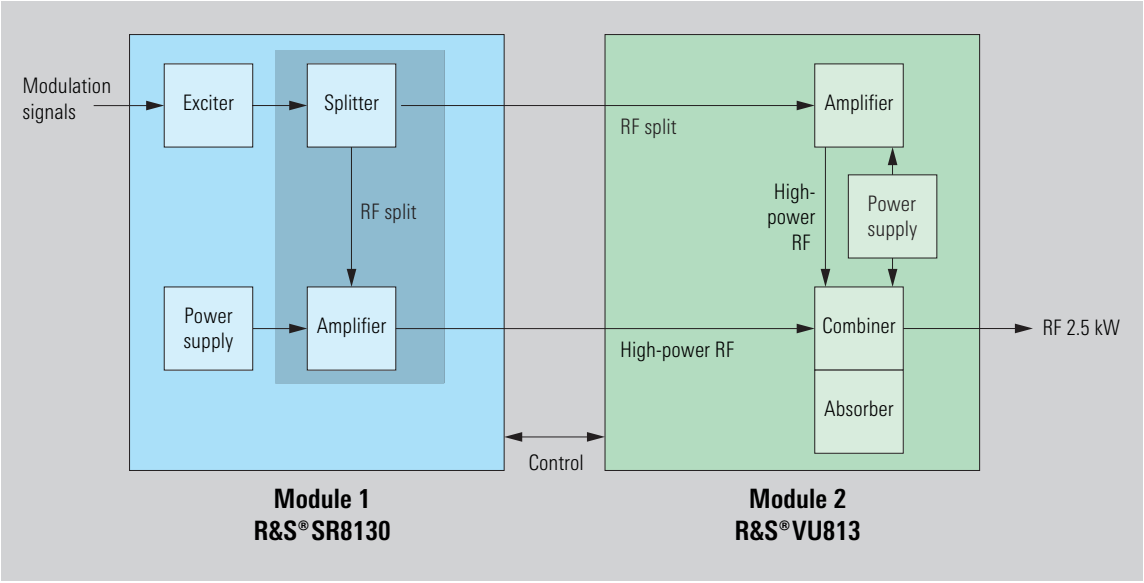
The transmitter control unit handles both internal and external communications, including all control functions. It is integrated on the exciter board. It provides a straightforward summary of the transmitter's current status on a display.

Internal communication with the connected components (e.g. amplifier) is handled via CAN bus. The control unit communicates with the external components via Ethernet.

All transmitter and/or amplifier parameters required for diagnostics are available locally as well as remotely via standard (IP) protocol and standard software (webbrowser/SNMP option). This enables the transmitter status of unattended stations to be accurately evaluated, and any servicing that may be needed to be optimally prepared.



R&S® SR8100 block diagram



R&S®SR8250A block diagram

Housing with integrated cooling

Nineteen-inch housing is used for all power classes. The transmitters are air-cooled with internal fans. The surrounding air is drawn in from the front. It cools the modules via conducted channels, and is expelled at the back. The compact fans are extremely powerful and highly efficient.

The fans are monitored at all times and can be replaced during operation, thus making transmitter servicing much easier.

Each amplifier module contains an optimized, highly efficient heat sink. This in conjunction with the elaborate cooling concept ensures effective cooling with only small amounts of air.

The frequency-response-compensated directional coupler integrated in the transmitter and built-in lightning protection round out the R&S®SR8000 transmitter family.

Other products

- VHF FM transmitters for high output power
- DAB/T-DMB transmitters for VHF band III and L band
- VHF/UHF TV transmitters, analog/digital
- All-in-one transmitter systems, including container solutions
- DVB-H systems
- Broadcasting measurement solutions

Specifications and ordering information

Frequency range		87.5 MHz to 108 MHz	
Internal tuning		menu-controlled in 10 kHz steps	
Frequency drift		<200 Hz/3 months	
Center frequency offset at ±75 kHz frequency deviation		typ. 0 Hz	
Nominal frequency deviation		adjustable from ±40 kHz to ±150 kHz	
Deviation limitation		adjustable from ±40 kHz to ±150 kHz	
Max. frequency deviation		±150 kHz	
Emission class		F3E, stereo and mono	
Stereo emissions		in line with ITU-R BS.450-3	
RF output			
Nominal impedance		50 Ω	
Nominal power		VSWR up to 1:1.5	
Audio input			
Connector		XLR	
	L and R mode	**multiplex mode**	**AES/EBU mode**
Input impedance	600 Ω or >2 kΩ, balanced/unbalanced		110 Ω, balanced
AF input level for nominal deviation	–6 dBu to +12 dBu	+5 dBu to +7 dBu	–12 dBFS to 0 dBFS
Control interfaces, remote-control interfaces			
Parallel remote-control interface		integrated	
TCP/IP		HTTP, SNMP (option)	
Auxiliary frequency			
Pilot-tone frequency		19 kHz	
Amplitude		1 V (V_{pp}) + 0.1 V into 1 kΩ; unbalanced	
Pilot-tone deviation		0 Hz to 15 kHz, adjustable in 100 Hz steps	
Output		BNC	
General data			
AC supply voltage		100 V to 240 V, single-phase; R&S®SR8100: 220 V to 240 V	
AC supply frequency		50 Hz or 60 Hz	
Permissible voltage variation		±10 %	
Power ratio		>0.9	
Cooling		air cooling by internal fans (surrounding air)	
Operating temperature range		+1 °C to +45 °C, upper limit decreased by +5 °C per 1000 m above mean sea level	
Storage temperature range		–40 °C to +70 °C	
Permissible relative humidity		<95 % at +26 °C	
Permissible external electric field strength		<10 V/m	
Maximum installation altitude		3000 m above mean sea level	

	R&S®SR8010	**R&S®SR8025**	**R&S®SR8050**	**R&S®SR8100**	**R&S®SR8130**	**R&S®SR82050A**
Nominal output power	100 W	250 W	500 W	1000 W	1300 W	2500 W
Power range (load with VSWR = 1)	10 W to 100 W	125 W to 250 W	125 W to 500 W	250 W to 1000 W	325 W to 1300 W	625 W to 2500 W
Connector	N, female	junction 7-16	junction 7-16	junction 7-16	junction 7-16	junction 7-16
Dimensions (W × H × D) without power cable	420 mm × 2 height units × 510 mm (16.54 in × 2 height units × 20.01 in)	420 mm × 4 height units × 590 mm (16.54 in × 3 height units × 23.23 in)	420 mm × 4 height units × 590 mm (16.54 in × 4 height units × 23.23 in)	420 mm × 4 height units × 590 mm (16.54 in × 4 height units × 23.23 in)	420 mm × 4 height units × 590 mm (16.54 in × 4 height units × 23.23 in)	420 mm × 8 height units × 590 mm (16.54 in × 8 height units × 23.23 in)
Amplifier	100 W	250 W	500 W	1000 W	1300 W	2 × 1300 W
Order No.	**5300.9002.02**	**5300.9102.02**	**5300.9202.02**	**5300.9302.02**	**5300.9302.03**	**5300.9502.02**

Certified Quality System
ISO 9001
REG. NO CERT-01 100 025007

More information at
www.rohde-schwarz.com
(search term: SR8000)

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